



RENEWABLES FOR SUSTAINABLE  
VILLAGE POWER

# PROJECT BRIEF

## Wind for Island and Non-governmental Development (WIND) in Indonesia

by Ian Baring-Gould 7/98

### Background

Wind-power systems can help indigenous economies achieve social advancement and increased self-sufficiency. The WIND project seeks to mobilize sustained local interest and capability through demonstration and participation. To achieve this objective at least 10 system applications will be carefully selected for locations in the eastern islands of Indonesia. Energy delivery and water pumping systems will be designed, installed and operated with the active participation of the local communities and non-governmental organizations.

One priority of the WIND project is to stimulate interest in wind energy technology as an environmentally sound, commercially viable investment for local and regional economies. The practical application of wind-power technologies should lead to entrepreneurial opportunities and an increased market for related products and services provided through a system of local tariffs. Such economic growth will create the potential for duplicating the project and provide a mechanism for continued system operations and maintenance, vital for long-term project success.

### Key Activities

Winrock International has contracted with the National Renewable Energy Laboratory (NREL) to provide technical assistance to the WIND project in the following areas:

- **Wind resource assessment.** Providing guidance in the selection of monitoring sites, the processing and analysis of wind data, and the determination of perspective locations for system installation
- **Technical training in wind energy technology and applications.** Helping with any problems encountered during the installation and operation of wind systems in Indonesia
- **System design review.** Assist in the design and analysis of proposed hybrid and water pumping systems
- **System performance modeling and economic analysis.** Use computer models developed at NREL to perform analysis on systems and prospective system loading

- **System monitoring and evaluation.** Design and install monitoring systems for both hybrid and water pumping systems. This will also allow for continued performance monitoring and evaluation.

### Status

Ten data-logging systems have been installed to monitor winds at 22 sites in the eastern islands of Indonesia. The systems are currently collecting data to support the NREL/Winrock wind mapping effort. Nine wind-power systems (Bergey Wind Power Co.) have been installed on the islands of Timor and Sumba to provide energy for community and entrepreneurial enterprises. Five of these systems were installed to provide water pumping for irrigation and household uses. The other systems are hybrid power systems designed to provide electrical power for peanut processing, lighting for community kiosks, a blacksmith shop, freezers for fish storage and popsicle production, and battery charging.

As a second phase of the project, fifty 600-W wind turbines (World Power Incorporated) were purchased for use in Indonesia. The turbines will be configured with other equipment to produce electricity for small hybrid water pumping applications. The systems will be leased to households and small businesses with the profits going to support the purchase of additional systems.

### Planned Activities

Partners in the WIND project will continue wind resource assessment and mapping, site identification, and project design activities. They will develop cost-effective system performance monitoring protocols, and install monitoring equipment on a representative set of systems. NREL will assist Winrock International with system startup and commissioning in Nusa Tenggara Timur, Indonesia under the sponsorship of USAID.

Location: Nusa Tenggara Timur (NTT), Indonesia

Project Manager: Winrock International

Sponsor: USAID

## **NREL Contact**

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